FIG. 1

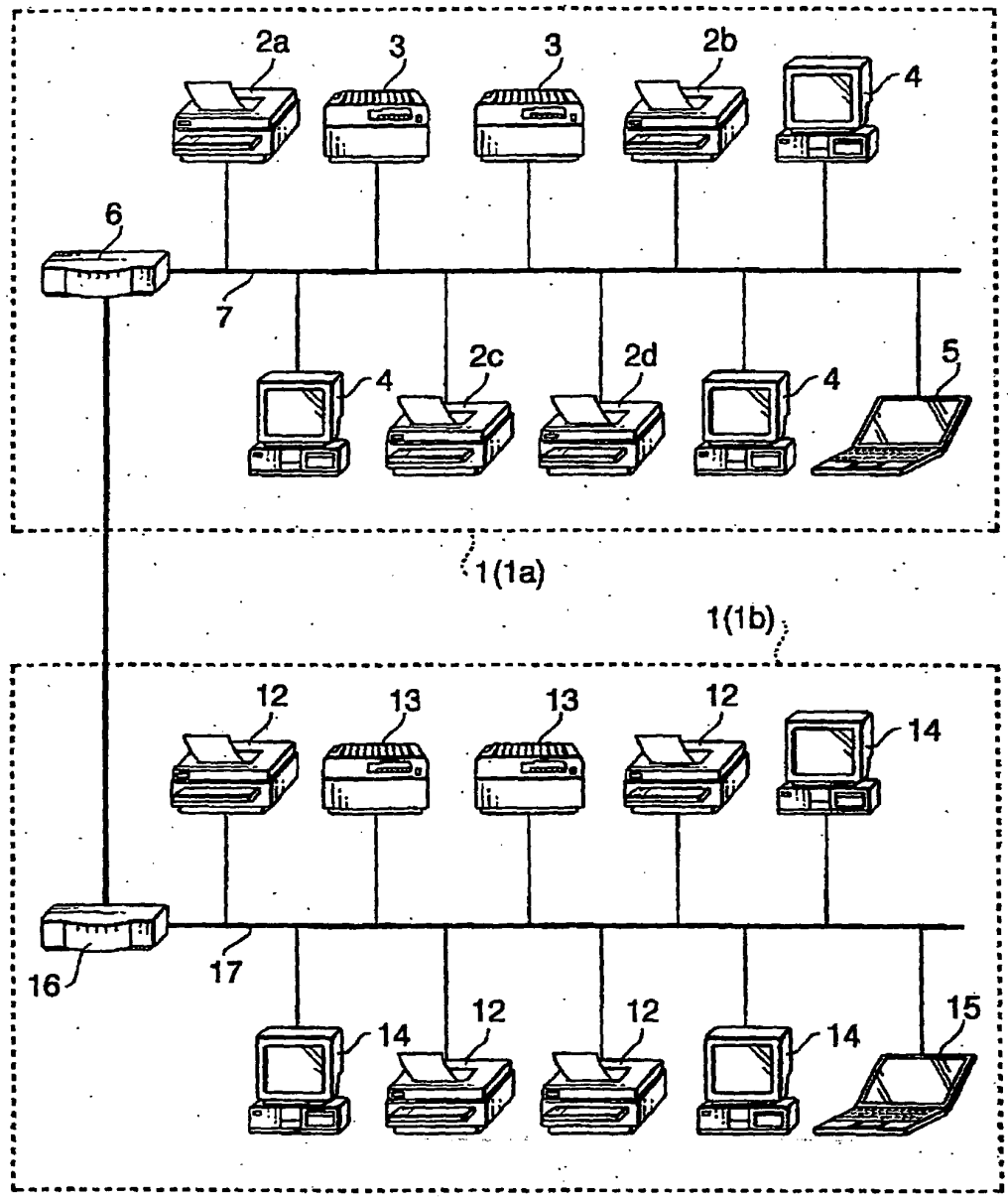


FIG.2A

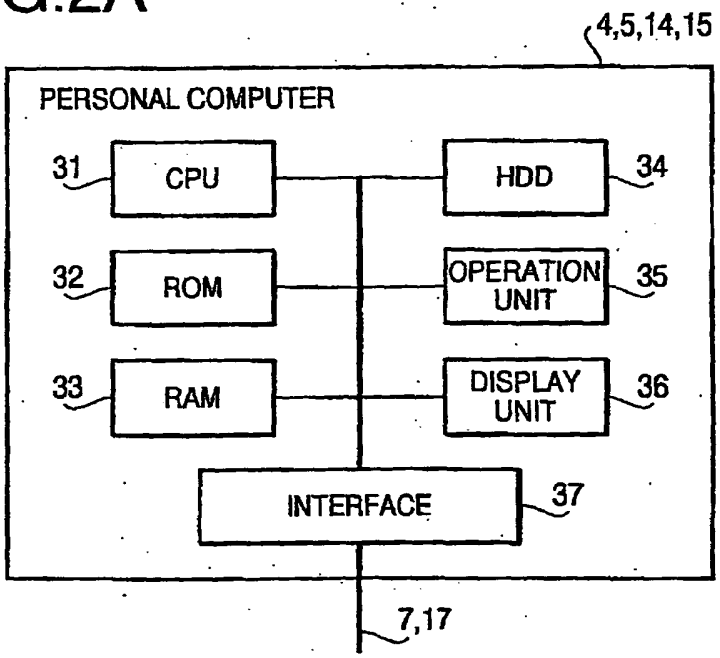
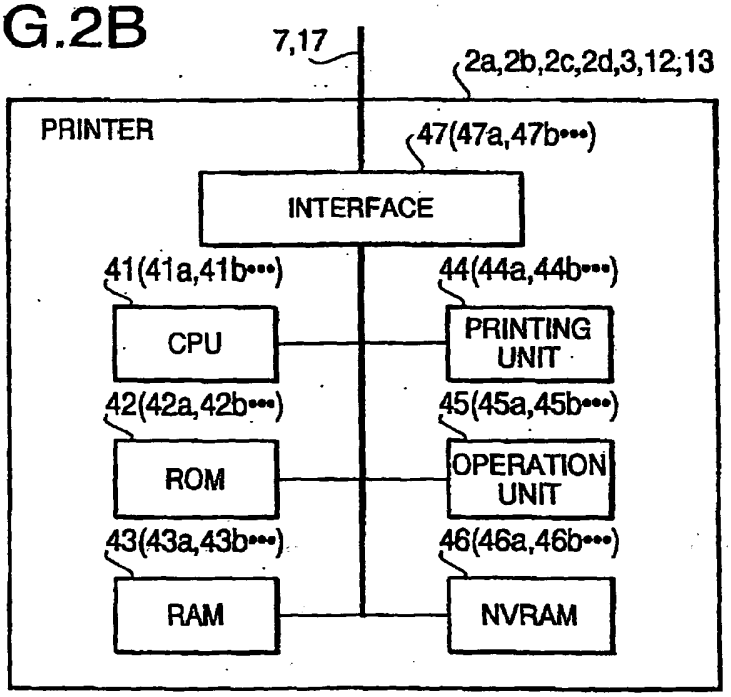

4,5,14,15
PERSONAL COMPUTER
31
CPU
HDD
34
32
ROM
OPERATION UNIT
35
33
RAM
DISPLAY UNIT
36
INTERFACE
37
7,17

FIG.2B


7,17
2a,2b,2c,2d,3,12,13
PRINTER
47(47a,47b•••)
INTERFACE
41(41a,41b•••)
44(44a,44b•••)
CPU
PRINTING UNIT
42(42a,42b•••)
45(45a,45b•••)
ROM
OPERATION UNIT
43(43a,43b•••)
46(46a,46b•••)
RAM
NVRAM

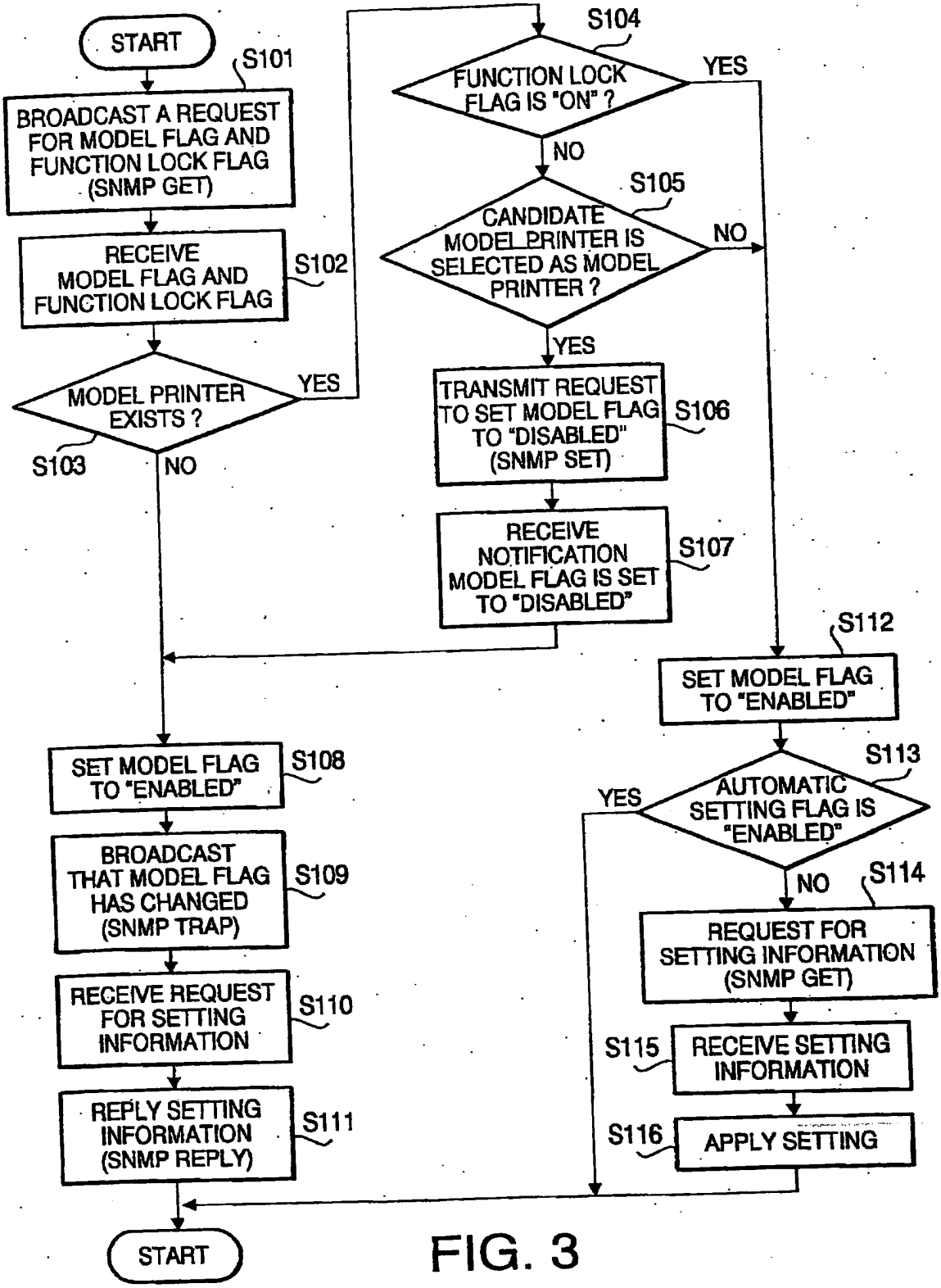

START
S101
BROADCAST A REQUEST FOR MODEL FLAG AND FUNCTION LOCK FLAG (SNMP GET)
RECEIVE MODEL FLAG AND FUNCTION LOCK FLAG
S102
MODEL PRINTER EXISTS ?
YES
S103
NO
S104
FUNCTION LOCK FLAG IS "ON" ?
YES
NO
S105
CANDIDATE MODEL PRINTER IS SELECTED AS MODEL PRINTER ?
NO
YES
TRANSMIT REQUEST TO SET MODEL FLAG TO "DISABLED" (SNMP SET)
S106
RECEIVE NOTIFICATION MODEL FLAG IS SET TO "DISABLED"
S107
S112
SET MODEL FLAG TO "ENABLED"
SET MODEL FLAG TO "ENABLED"
S108
S113
AUTOMATIC SETTING FLAG IS "ENABLED"
YES
BROADCAST THAT MODEL FLAG HAS CHANGED (SNMP TRAP)
S109
NO
S114
REQUEST FOR SETTING INFORMATION (SNMP GET)
RECEIVE REQUEST FOR SETTING INFORMATION
S110
S115
RECEIVE SETTING INFORMATION
REPLY SETTING INFORMATION (SNMP REPLY)
S111
S116
APPLY SETTING
START

FIG. 3

FIG. 4

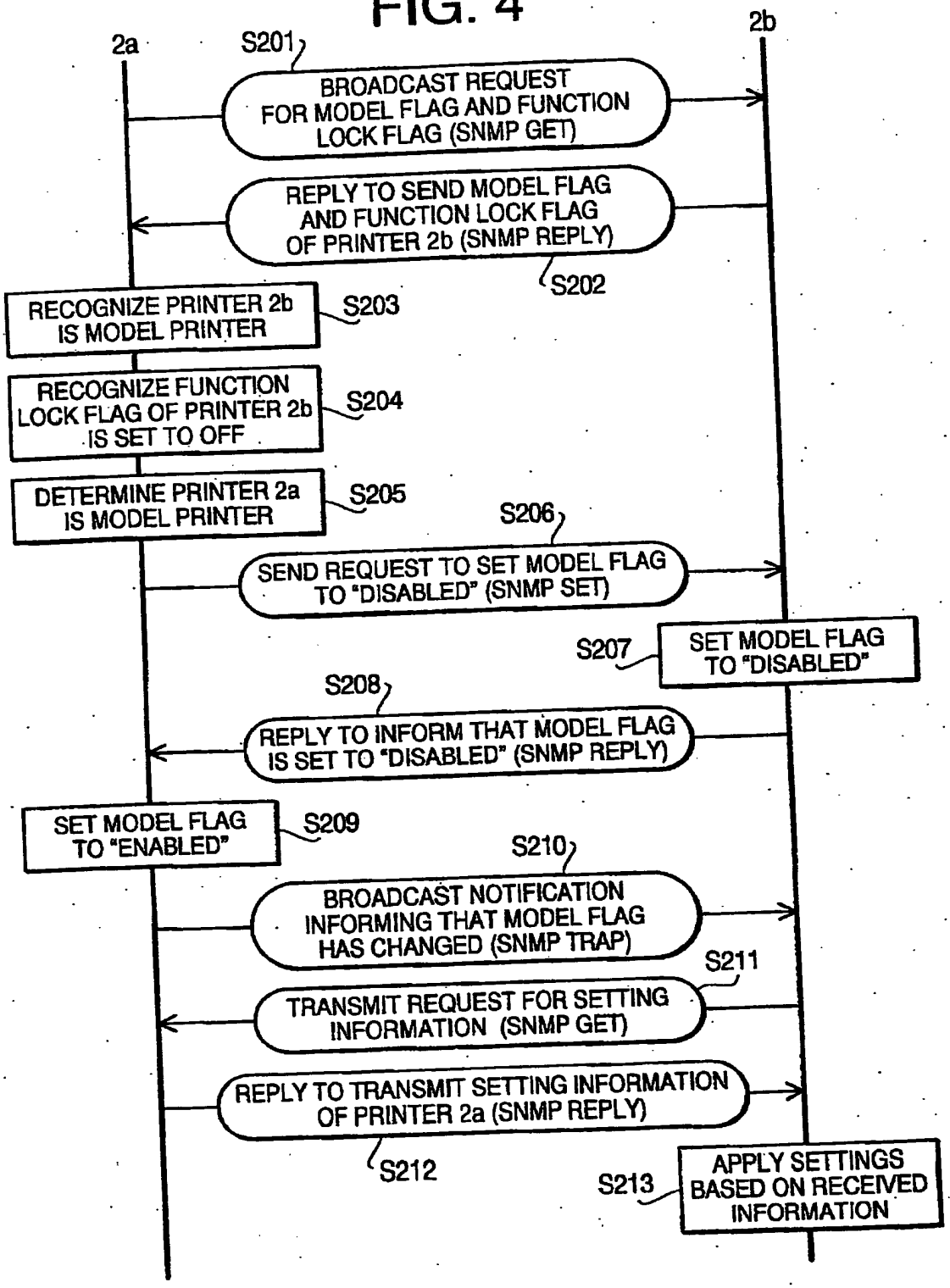

2a
2b
S201
BROADCAST REQUEST FOR MODEL FLAG AND FUNCTION LOCK FLAG (SNMP GET)
REPLY TO SEND MODEL FLAG AND FUNCTION LOCK FLAG OF PRINTER 2b (SNMP REPLY)
S202
RECOGNIZE PRINTER 2b IS MODEL PRINTER
S203
RECOGNIZE FUNCTION LOCK FLAG OF PRINTER 2b IS SET TO OFF
S204
DETERMINE PRINTER 2a IS MODEL PRINTER
S205
S206
SEND REQUEST TO SET MODEL FLAG TO "DISABLED" (SNMP SET)
S207
SET MODEL FLAG TO "DISABLED"
S208
REPLY TO INFORM THAT MODEL FLAG IS SET TO "DISABLED" (SNMP REPLY)
SET MODEL FLAG TO "ENABLED"
S209
S210
BROADCAST NOTIFICATION INFORMING THAT MODEL FLAG HAS CHANGED (SNMP TRAP)
S211
TRANSMIT REQUEST FOR SETTING INFORMATION (SNMP GET)
REPLY TO TRANSMIT SETTING INFORMATION OF PRINTER 2a (SNMP REPLY)
S212
S213
APPLY SETTINGS BASED ON RECEIVED INFORMATION

FIG. 5

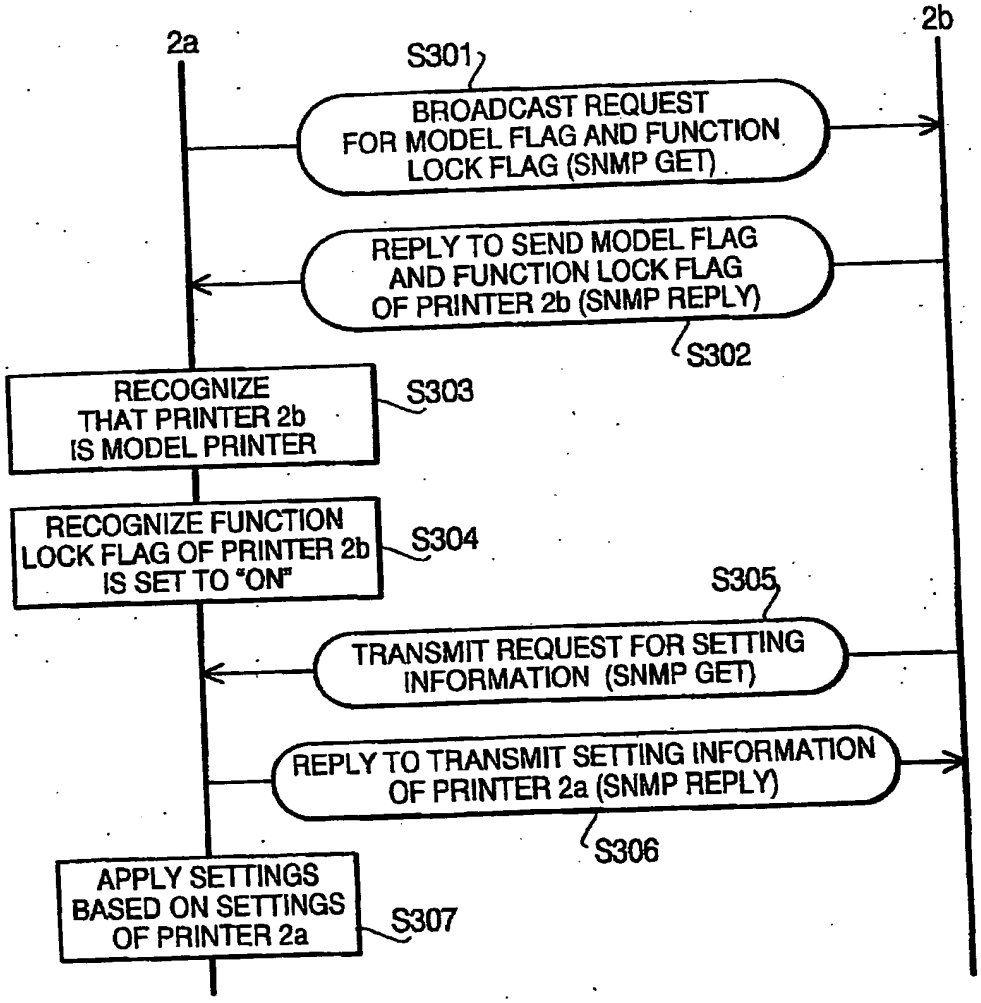

2a
2b
S301
BROADCAST REQUEST FOR MODEL FLAG AND FUNCTION LOCK FLAG (SNMP GET)
REPLY TO SEND MODEL FLAG AND FUNCTION LOCK FLAG OF PRINTER 2b (SNMP REPLY)
S302
RECOGNIZE THAT PRINTER 2b IS MODEL PRINTER
S303
RECOGNIZE FUNCTION LOCK FLAG OF PRINTER 2b IS SET TO "ON"
S304
S305
TRANSMIT REQUEST FOR SETTING INFORMATION (SNMP GET)
REPLY TO TRANSMIT SETTING INFORMATION OF PRINTER 2a (SNMP REPLY)
S306
APPLY SETTINGS BASED ON SETTINGS OF PRINTER 2a
S307

FIG. 6

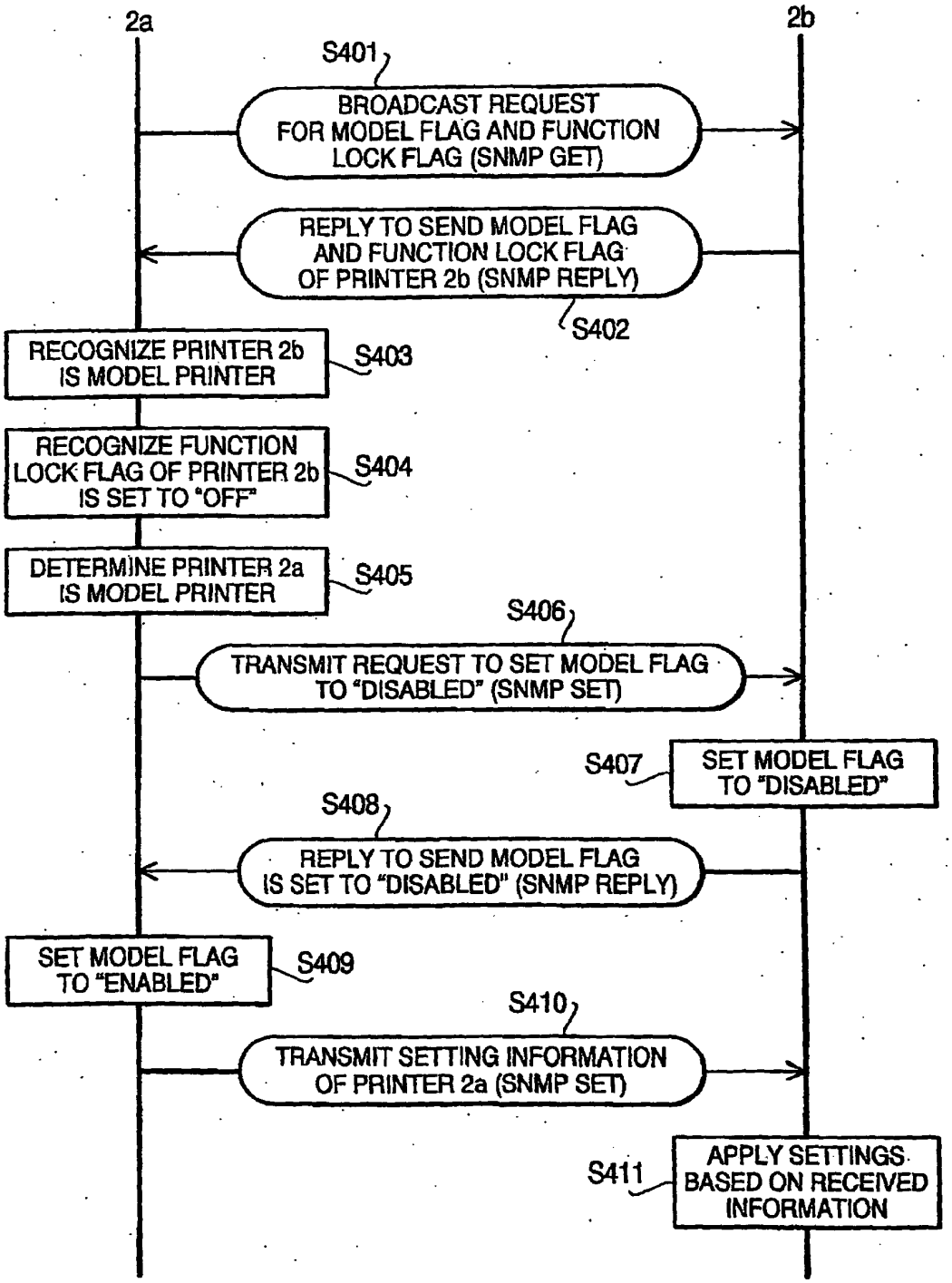

2a
2b
S401
BROADCAST REQUEST FOR MODEL FLAG AND FUNCTION LOCK FLAG (SNMP GET)
REPLY TO SEND MODEL FLAG AND FUNCTION LOCK FLAG OF PRINTER 2b (SNMP REPLY)
S402
RECOGNIZE PRINTER 2b IS MODEL PRINTER
S403
RECOGNIZE FUNCTION LOCK FLAG OF PRINTER 2b IS SET TO "OFF"
S404
DETERMINE PRINTER 2a IS MODEL PRINTER
S405
S406
TRANSMIT REQUEST TO SET MODEL FLAG TO "DISABLED" (SNMP SET)
S407
SET MODEL FLAG TO "DISABLED"
S408
REPLY TO SEND MODEL FLAG IS SET TO "DISABLED" (SNMP REPLY)
SET MODEL FLAG TO "ENABLED"
S409
S410
TRANSMIT SETTING INFORMATION OF PRINTER 2a (SNMP SET)
S411
APPLY SETTINGS BASED ON RECEIVED INFORMATION

FIG. 7

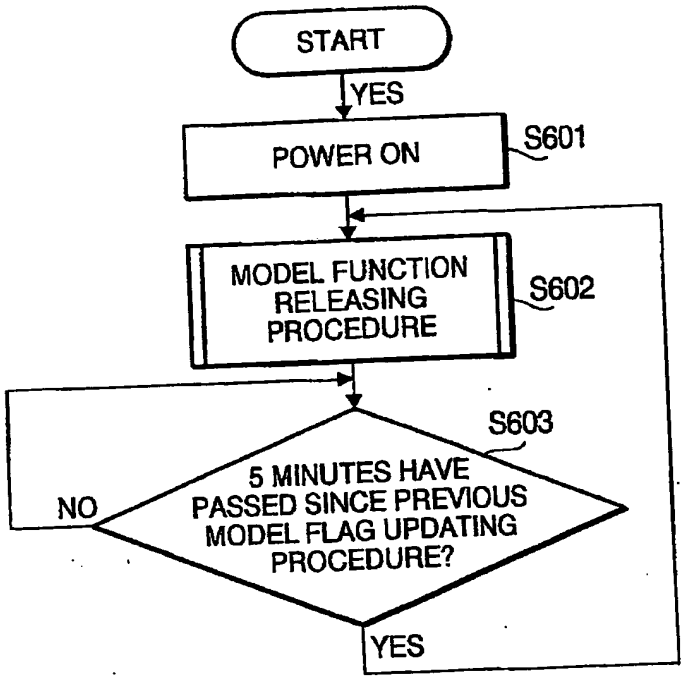

START
YES
POWER ON
S601
MODEL FUNCTION RELEASING PROCEDURE
S602
S603
5 MINUTES HAVE PASSED SINCE PREVIOUS MODEL FLAG UPDATING PROCEDURE?
NO
YES

FIG. 8

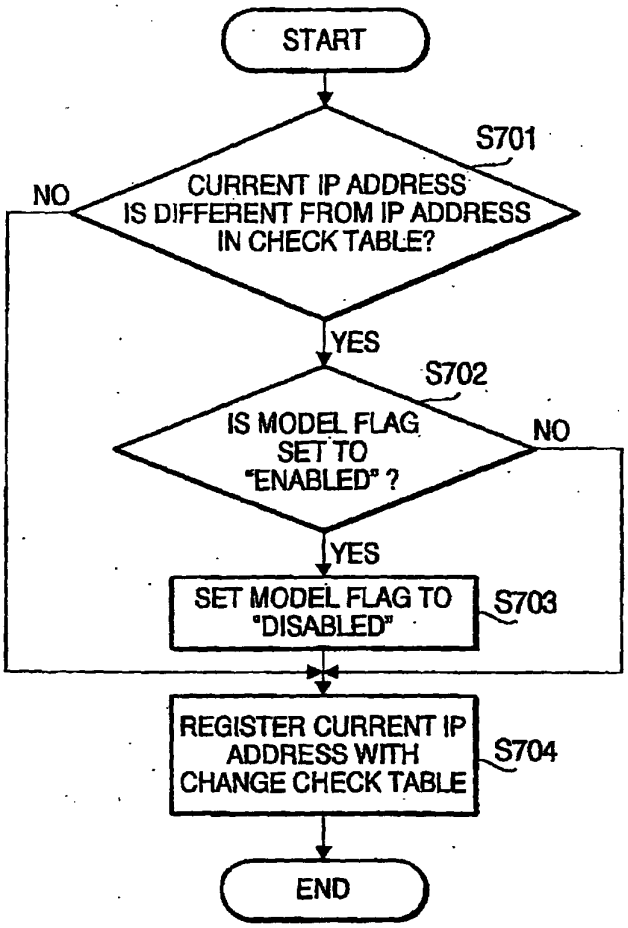


FIG. 9

PREVIOUS IP ADDRESS
11. 122. 33. 44

FIG.10

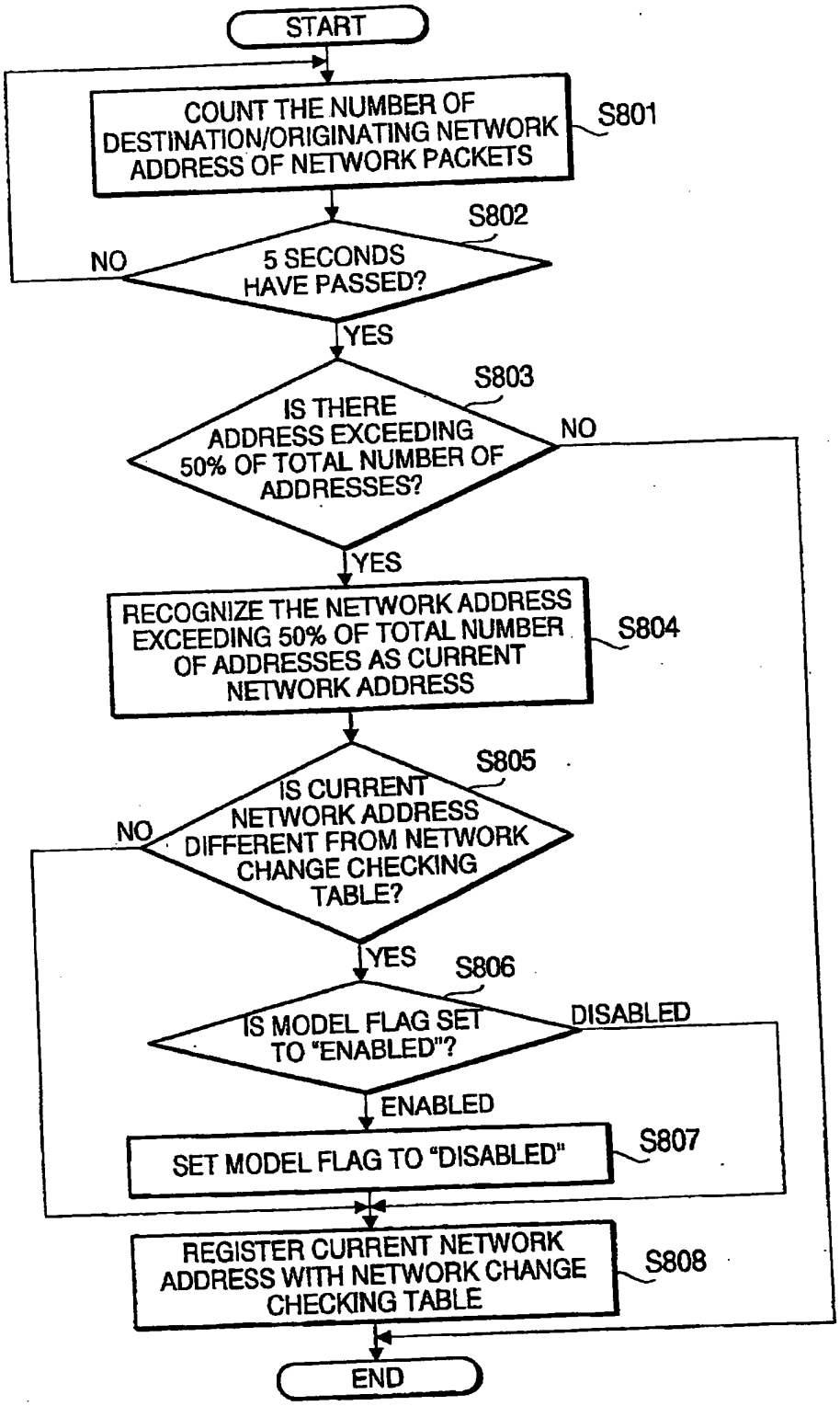

START
COUNT THE NUMBER OF DESTINATION/ORIGINATING NETWORK ADDRESS OF NETWORK PACKETS
S801
S802
5 SECONDS HAVE PASSED?
NO
YES
S803
IS THERE ADDRESS EXCEEDING 50% OF TOTAL NUMBER OF ADDRESSES?
NO
YES
RECOGNIZE THE NETWORK ADDRESS EXCEEDING 50% OF TOTAL NUMBER OF ADDRESSES AS CURRENT NETWORK ADDRESS
S804
S805
IS CURRENT NETWORK ADDRESS DIFFERENT FROM NETWORK CHANGE CHECKING TABLE?
NO
YES
S806
IS MODEL FLAG SET TO "ENABLED"?
DISABLED
ENABLED
SET MODEL FLAG TO "DISABLED"
S807
REGISTER CURRENT NETWORK ADDRESS WITH NETWORK CHANGE CHECKING TABLE
S808
END

FIG.11

PREVIOUS NETWORK ADDRESS
11.122. *.*

FIG.12

NETWORK ADDRESS	OCCURRENCE
11.122. *.*	178
133.233.22. *	5
•••	•••
11.125. *.*	4

FIG.13

NOTIFY* HTTP/1.1
HOST : 289.255.255.250:1900
LOCATION : http://11.22.33.44/upnp/description/model.xml
NT : upnp : rootdevice
NTS : ssdp : modelchange
SERVER : LaserPrinter1/1.0UPnP/1.0

FIG.14

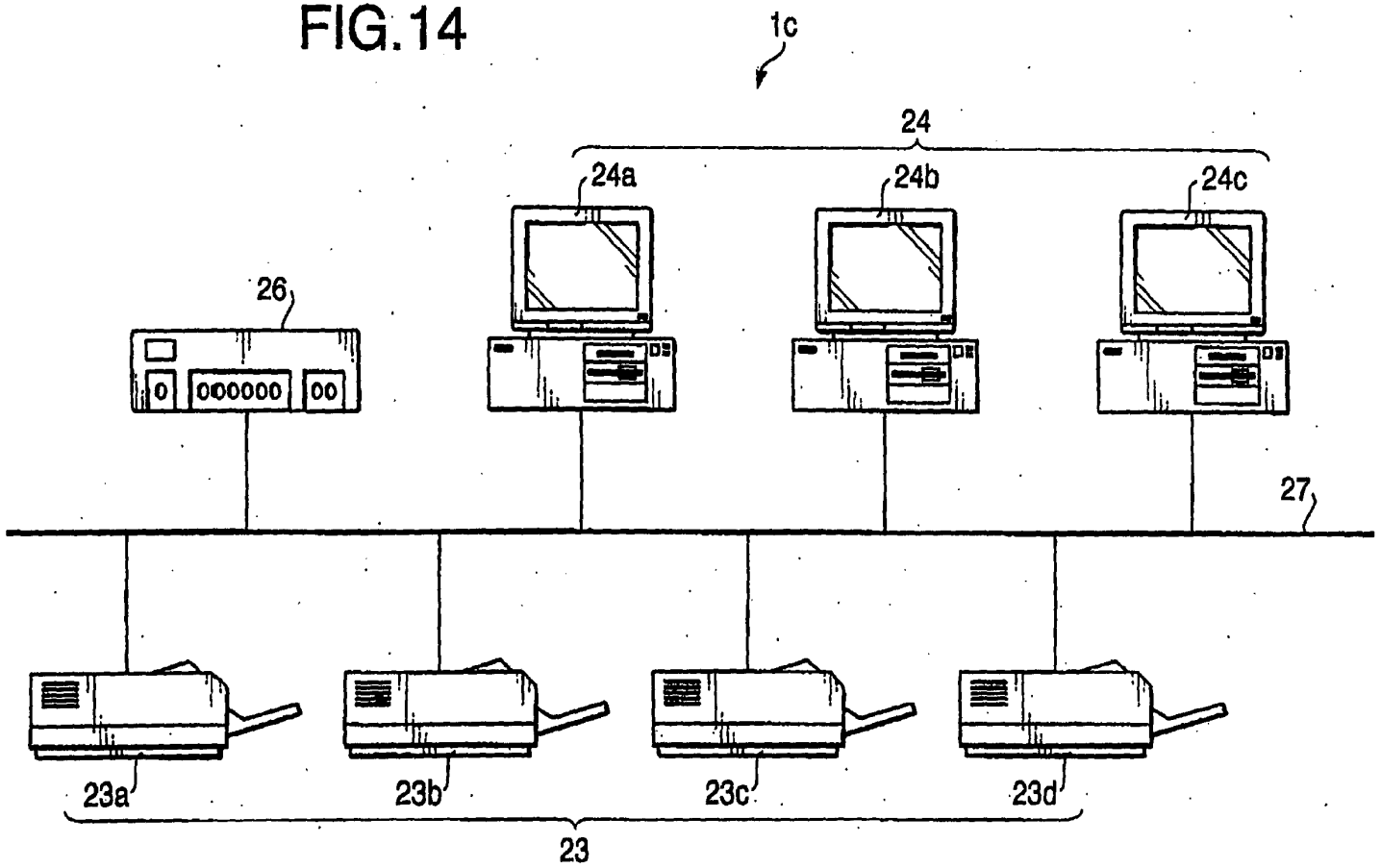


FIG.15A

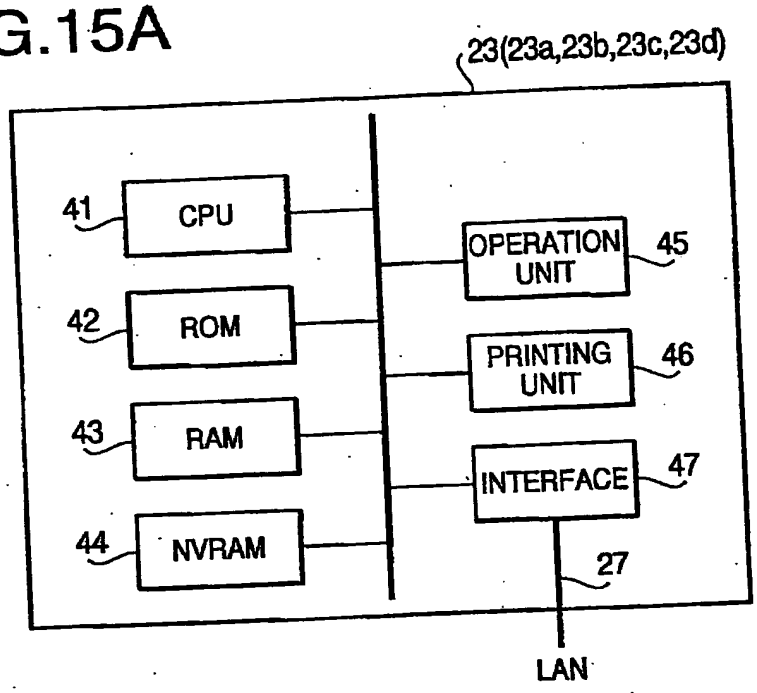


FIG.15B

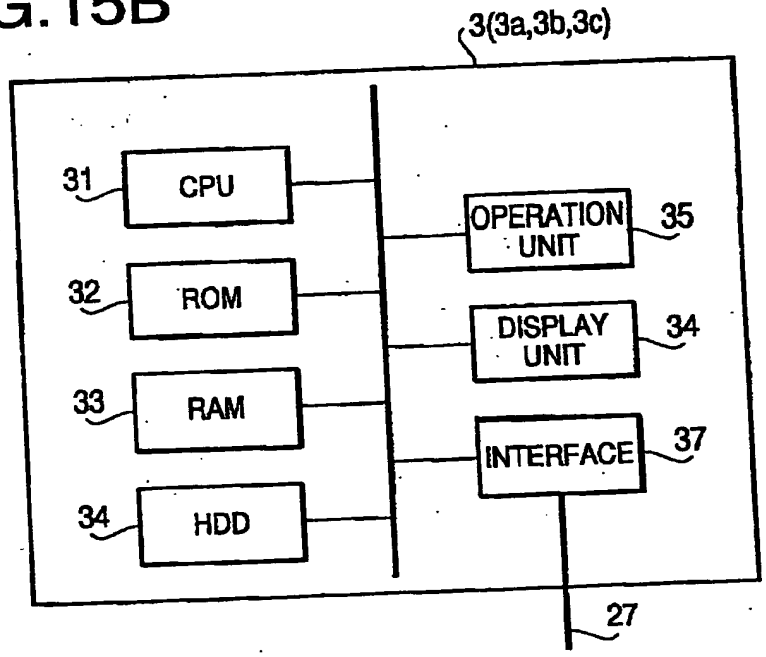


FIG.16A

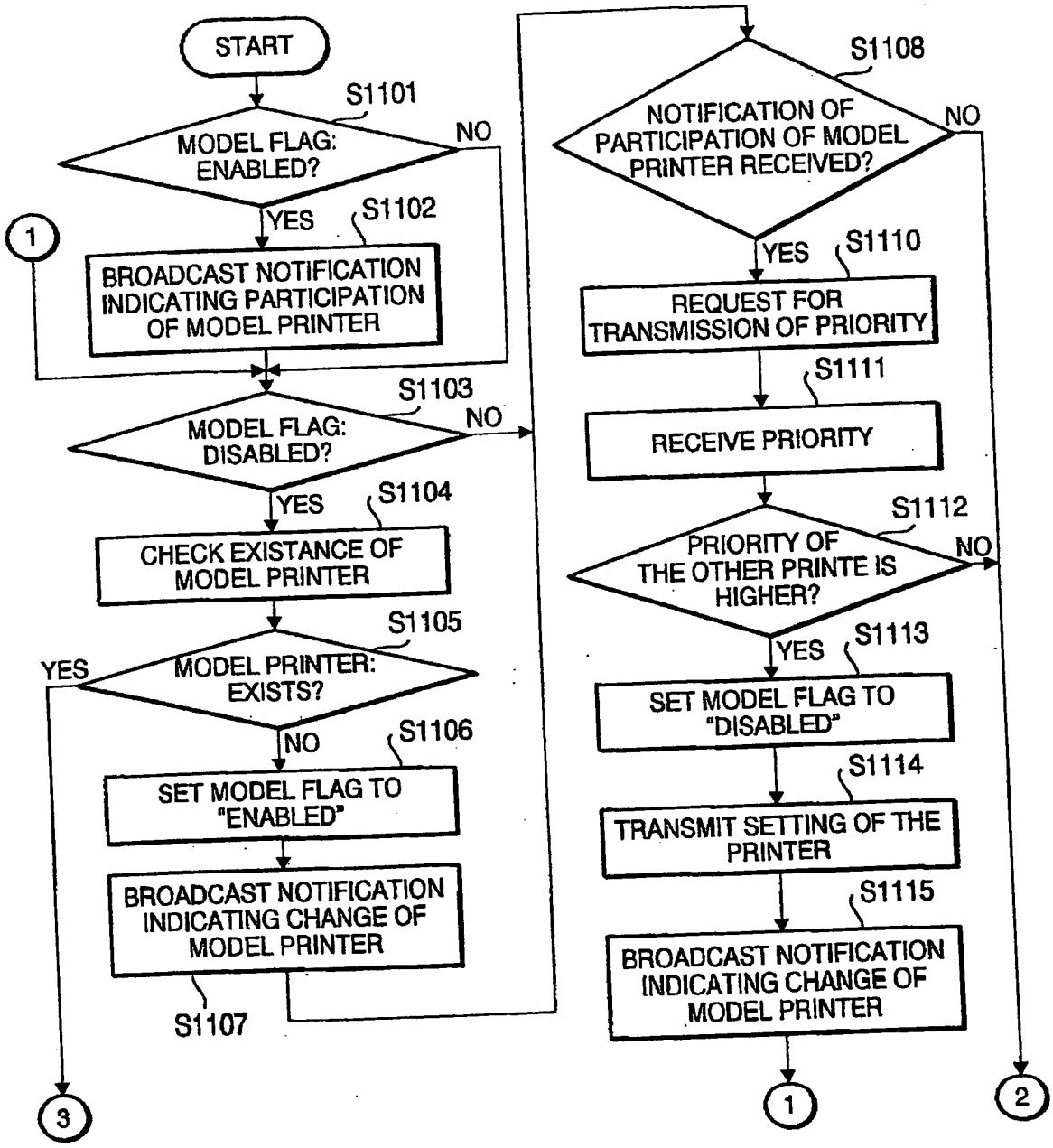

START
S1101
MODEL FLAG: ENABLED?
NO
YES
S1102
BROADCAST NOTIFICATION INDICATING PARTICIPATION OF MODEL PRINTER
1
S1103
MODEL FLAG: DISABLED?
NO
YES
S1104
CHECK EXISTANCE OF MODEL PRINTER
S1105
YES
MODEL PRINTER: EXISTS?
NO
S1106
SET MODEL FLAG TO "ENABLED"
BROADCAST NOTIFICATION INDICATING CHANGE OF MODEL PRINTER
S1107
3
S1108
NOTIFICATION OF PARTICIPATION OF MODEL PRINTER RECEIVED?
NO
YES
S1110
REQUEST FOR TRANSMISSION OF PRIORITY
S1111
RECEIVE PRIORITY
S1112
PRIORITY OF THE OTHER PRINTE IS HIGHER?
NO
YES
S1113
SET MODEL FLAG TO "DISABLED"
S1114
TRANSMIT SETTING OF THE PRINTER
S1115
BROADCAST NOTIFICATION INDICATING CHANGE OF MODEL PRINTER
1
2

FIG.16B

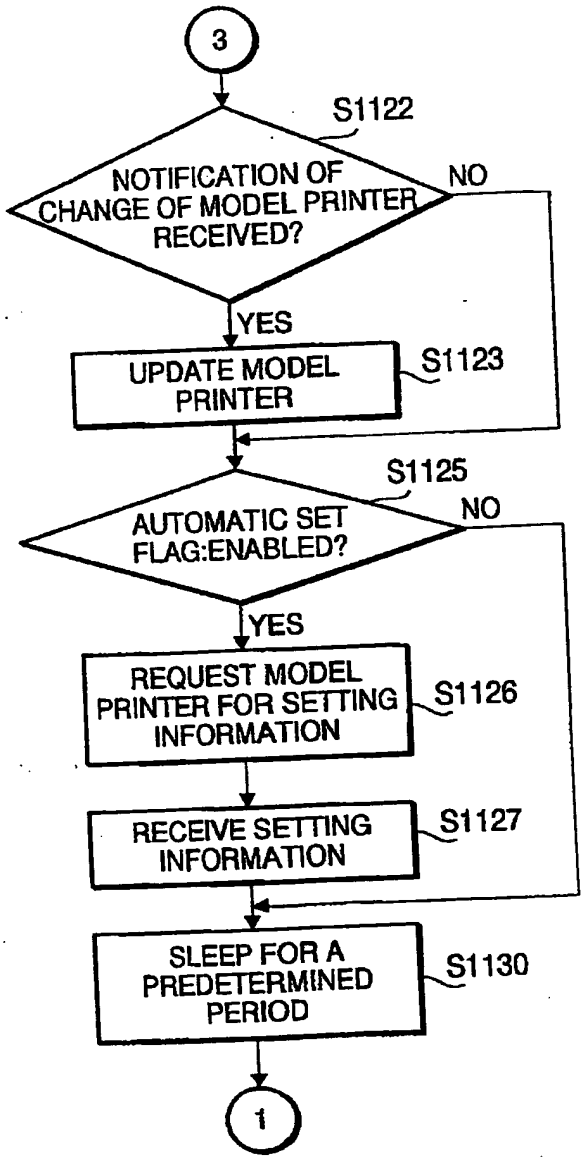

3
S1122
NOTIFICATION OF CHANGE OF MODEL PRINTER RECEIVED?
NO
YES
UPDATE MODEL PRINTER
S1123
S1125
AUTOMATIC SET FLAG:ENABLED?
NO
YES
REQUEST MODEL PRINTER FOR SETTING INFORMATION
S1126
RECEIVE SETTING INFORMATION
S1127
SLEEP FOR A PREDETERMINED PERIOD
S1130
1

FIG.16C

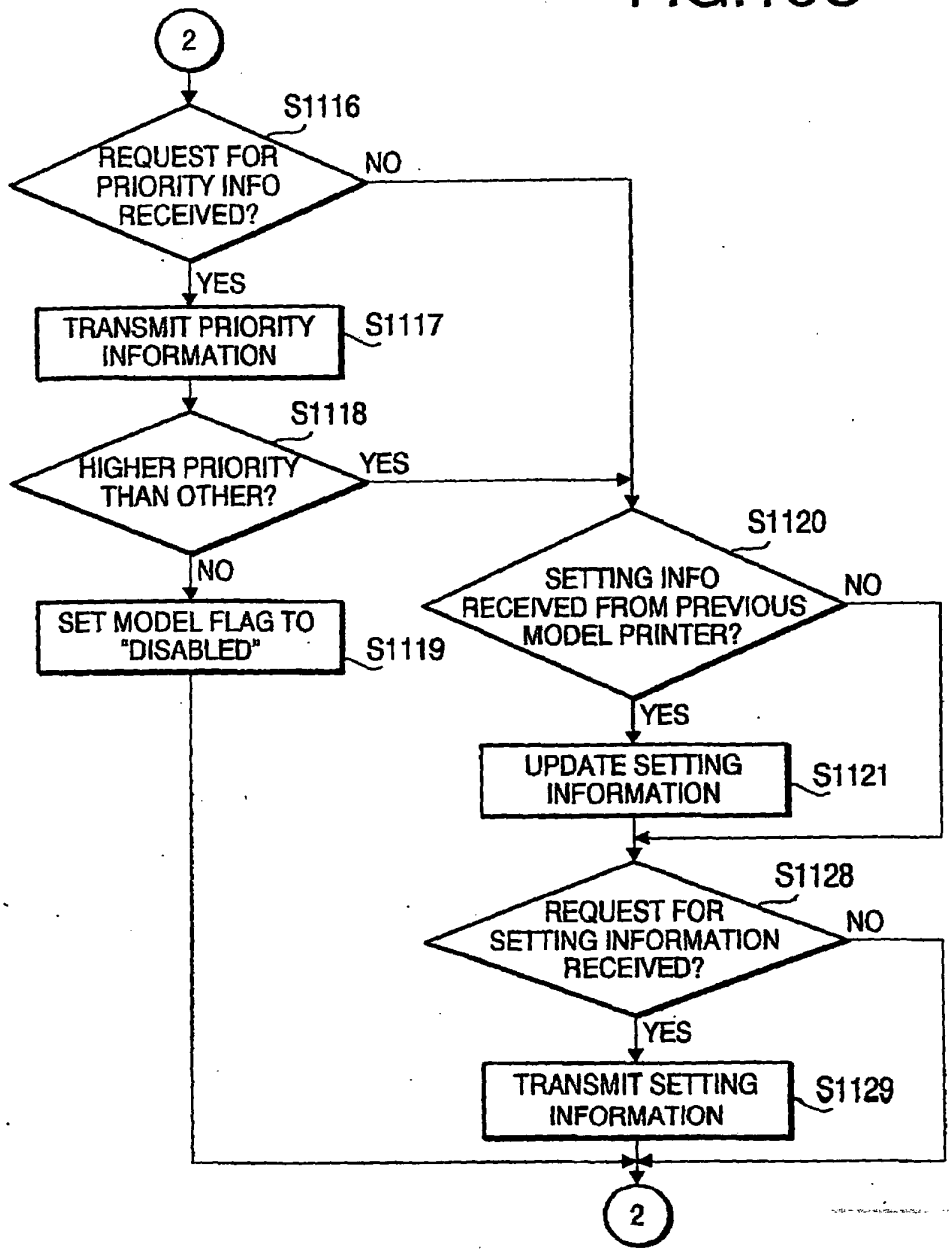

2
S1116
REQUEST FOR PRIORITY INFO RECEIVED?
NO
YES
TRANSMIT PRIORITY INFORMATION
S1117
S1118
HIGHER PRIORITY THAN OTHER?
YES
NO
SET MODEL FLAG TO "DISABLED"
S1119
S1120
SETTING INFO RECEIVED FROM PREVIOUS MODEL PRINTER?
NO
YES
UPDATE SETTING INFORMATION
S1121
S1128
REQUEST FOR SETTING INFORMATION RECEIVED?
NO
YES
TRANSMIT SETTING INFORMATION
S1129
2

FIG.17

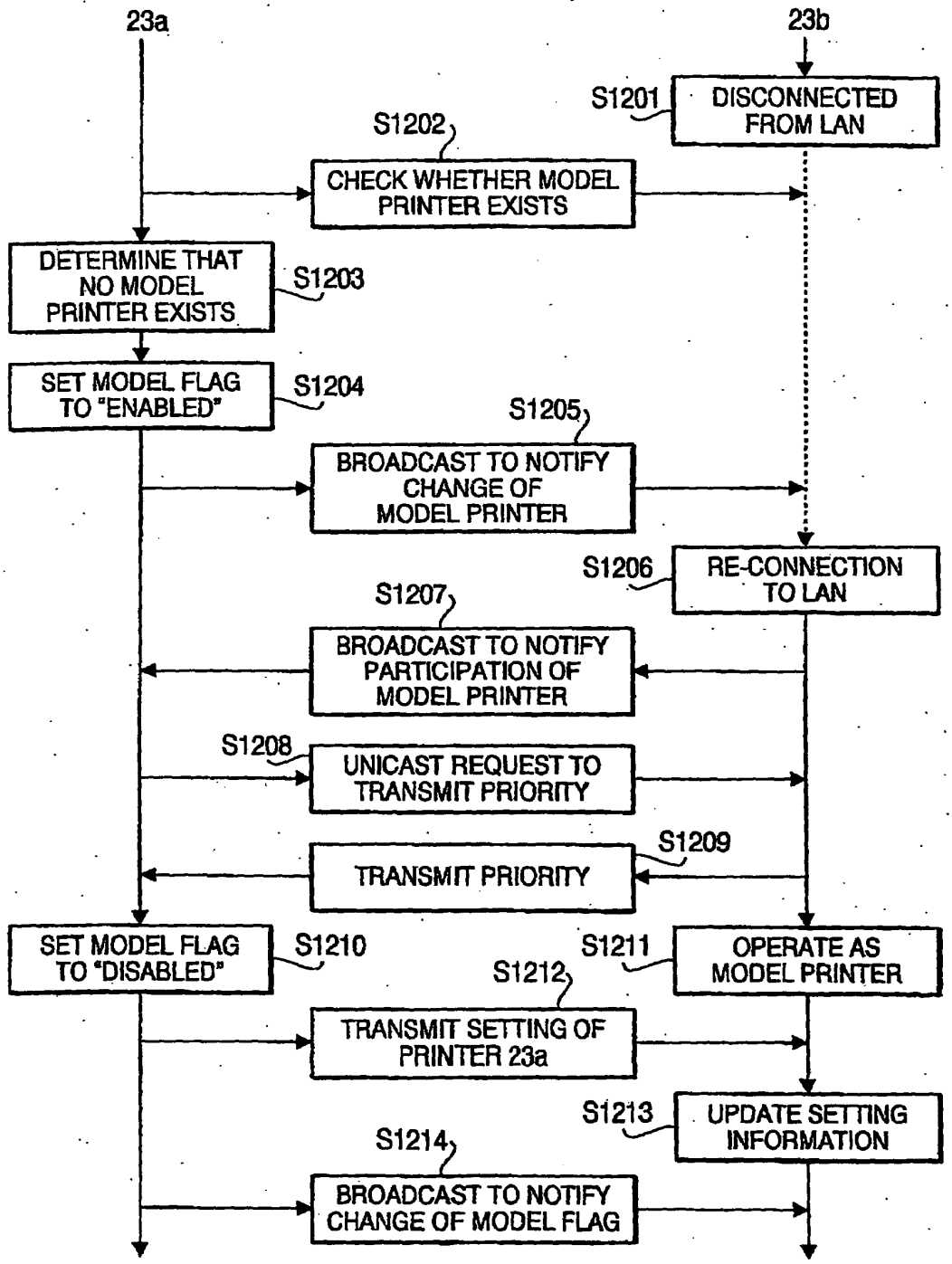

23a
23b
S1201
DISCONNECTED FROM LAN
S1202
CHECK WHETHER MODEL PRINTER EXISTS
DETERMINE THAT NO MODEL PRINTER EXISTS
S1203
SET MODEL FLAG TO "ENABLED"
S1204
S1205
BROADCAST TO NOTIFY CHANGE OF MODEL PRINTER
S1206
RE-CONNECTION TO LAN
S1207
BROADCAST TO NOTIFY PARTICIPATION OF MODEL PRINTER
S1208
UNICAST REQUEST TO TRANSMIT PRIORITY
S1209
TRANSMIT PRIORITY
SET MODEL FLAG TO "DISABLED"
S1210
S1211
OPERATE AS MODEL PRINTER
S1212
TRANSMIT SETTING OF PRINTER 23a
S1213
UPDATE SETTING INFORMATION
S1214
BROADCAST TO NOTIFY CHANGE OF MODEL FLAG

FIG.18

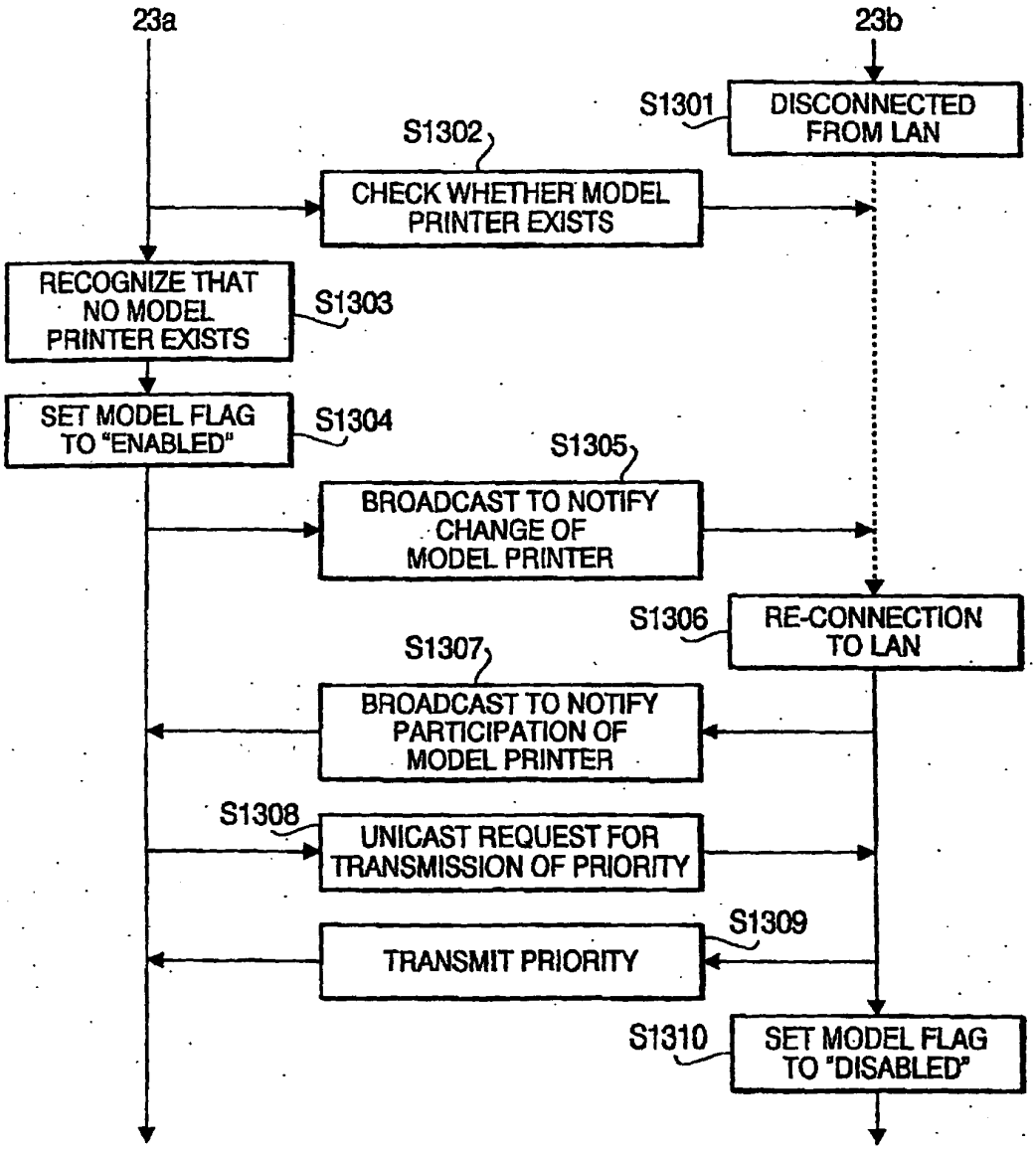

23a
23b
S1301
DISCONNECTED FROM LAN
S1302
CHECK WHETHER MODEL PRINTER EXISTS
RECOGNIZE THAT NO MODEL PRINTER EXISTS
S1303
SET MODEL FLAG TO "ENABLED"
S1304
S1305
BROADCAST TO NOTIFY CHANGE OF MODEL PRINTER
S1306
RE-CONNECTION TO LAN
S1307
BROADCAST TO NOTIFY PARTICIPATION OF MODEL PRINTER
S1308
UNICAST REQUEST FOR TRANSMISSION OF PRIORITY
S1309
TRANSMIT PRIORITY
S1310
SET MODEL FLAG TO "DISABLED"

FIG.19

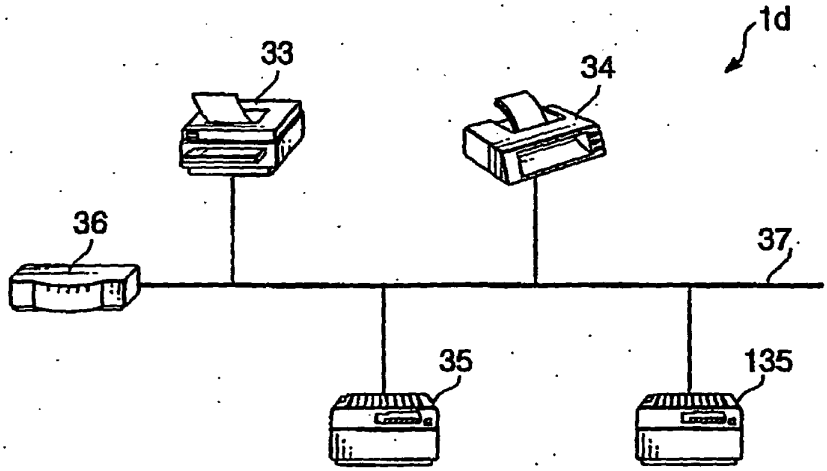

1d
33
34
36
37
35
135

FIG.20

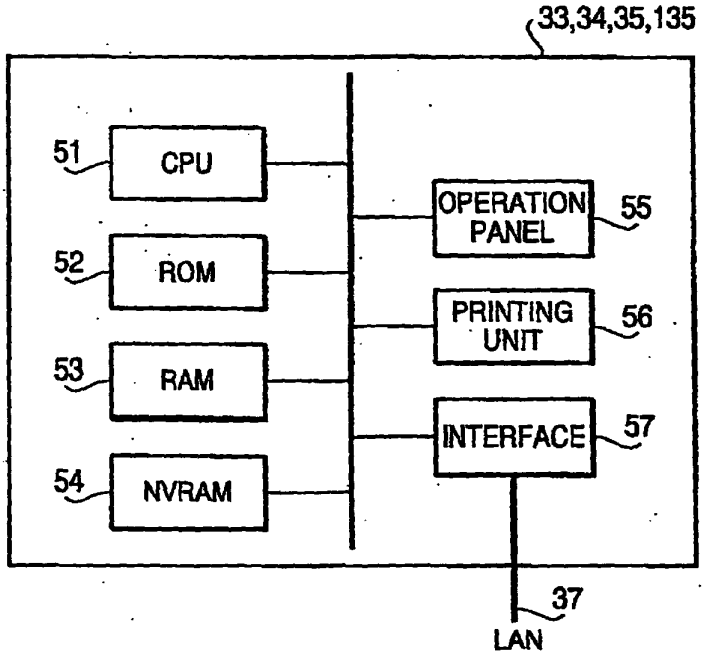

33,34,35,135
51
CPU
52
ROM
53
RAM
54
NVRAM
OPERATION PANEL
55
PRINTING UNIT
56
INTERFACE
57
37
LAN

FIG.21

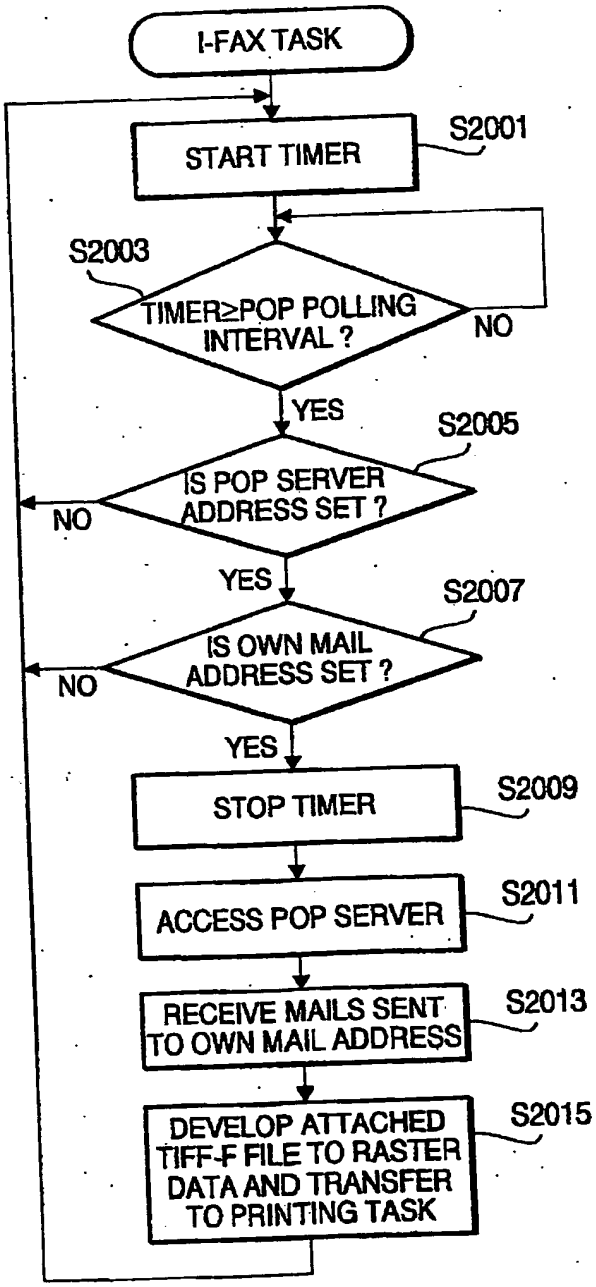

I-FAX TASK
START TIMER
S2001
S2003
TIMER≥POP POLLING INTERVAL ?
NO
YES
S2005
IS POP SERVER ADDRESS SET ?
NO
YES
S2007
IS OWN MAIL ADDRESS SET ?
NO
YES
STOP TIMER
S2009
ACCESS POP SERVER
S2011
RECEIVE MAILS SENT TO OWN MAIL ADDRESS
S2013
DEVELOP ATTACHED TIFF-F FILE TO RASTER DATA AND TRANSFER TO PRINTING TASK
S2015

FIG.22

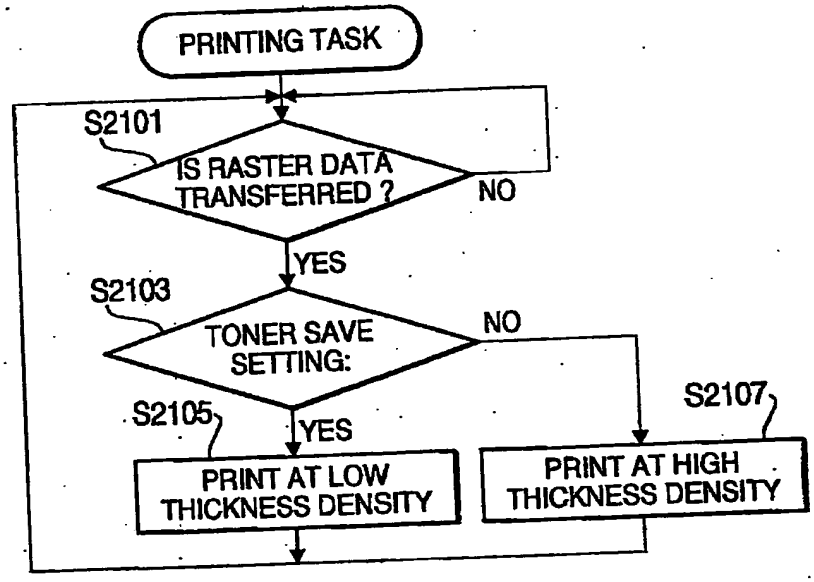

PRINTING TASK
S2101
IS RASTER DATA TRANSFERRED ?
NO
YES
S2103
TONER SAVE SETTING:
NO
S2105
YES
S2107
PRINT AT LOW THICKNESS DENSITY
PRINT AT HIGH THICKNESS DENSITY

FIG.23A

POP Server Address	11.122.1.2
POP Polling Interval (min.)	10
.....	.....
.....	.....
Toner Save	YES

FIG.23B

Own IP Address	11.122.33.44
.....	.....
.....	.....
Own Mail Address	mfo@bro.com